

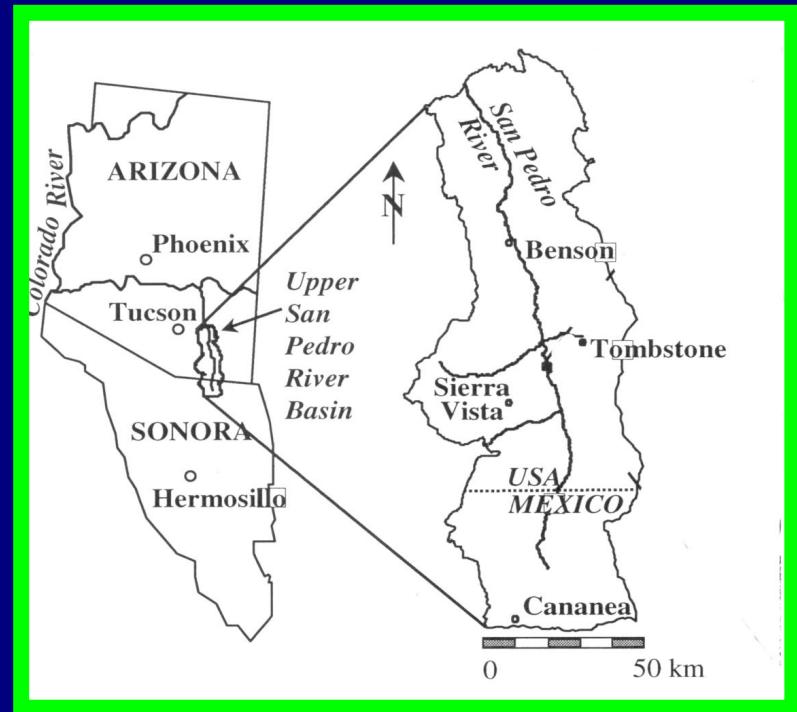
Mesquite management alters carbon gas (CO_2 , CH_4) fluxes in the SRER



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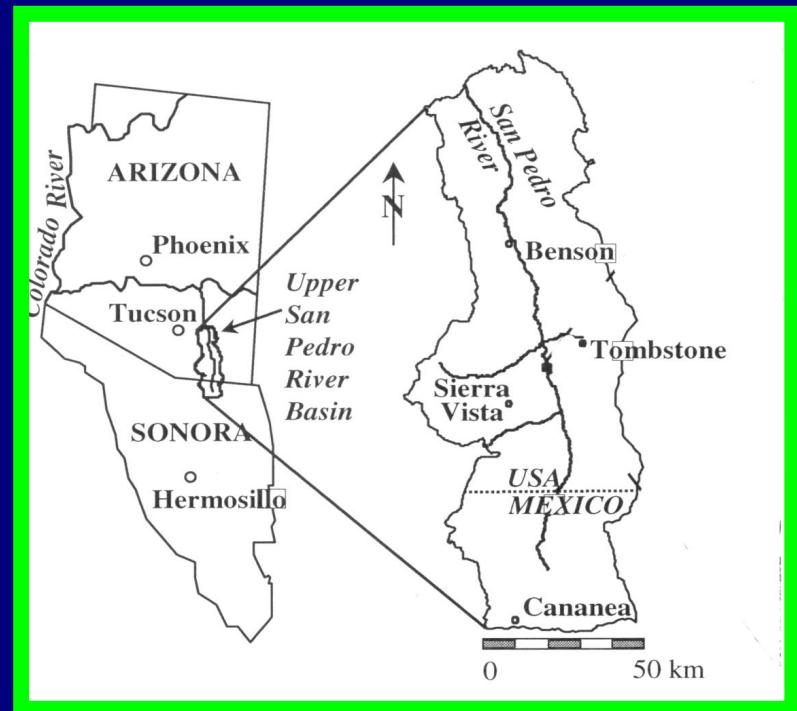
SPRNCA (2002-2004)

- Three sites: established mesquite, sacaton grassland, open annuals/forbs



SPRNCA (2002-2004)

- Three sites: established mesquite, sacaton grassland, open annuals/forbs
- CO₂ emissions not correlated with soil C content given adequate rain
- Dry monsoon: lower C soils produced less CO₂
- CH₄ consumption: annual higher than temperate soils





2003: SRER

- 50% soil C
- Lower elevation
(1000 m vs. 1190)
- Less rainfall
(250 mm vs. 350 mm)

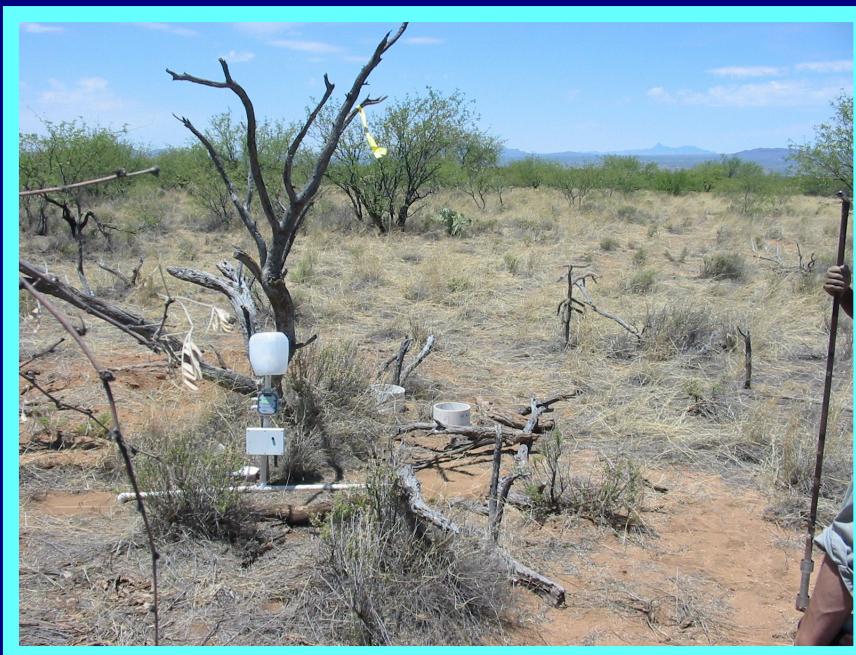


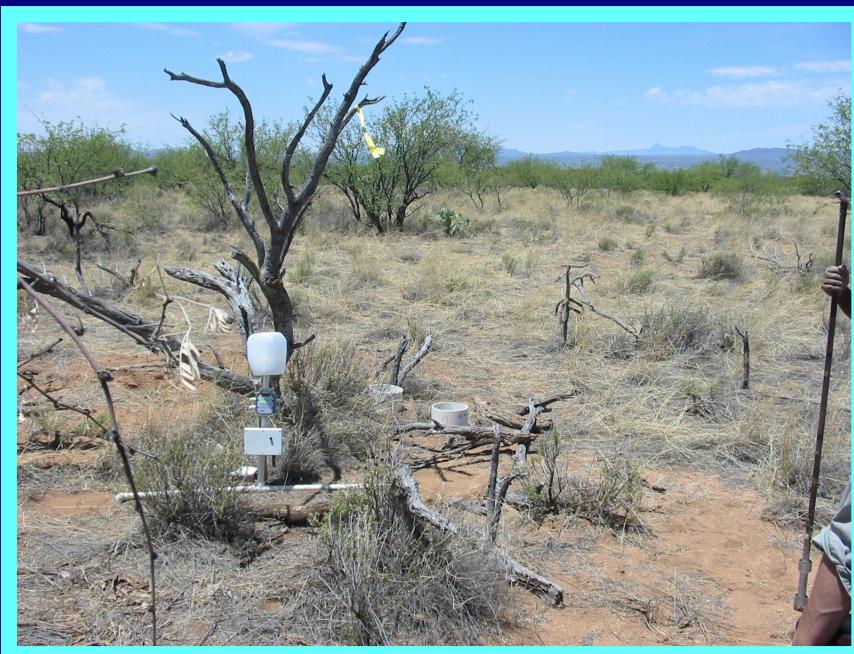
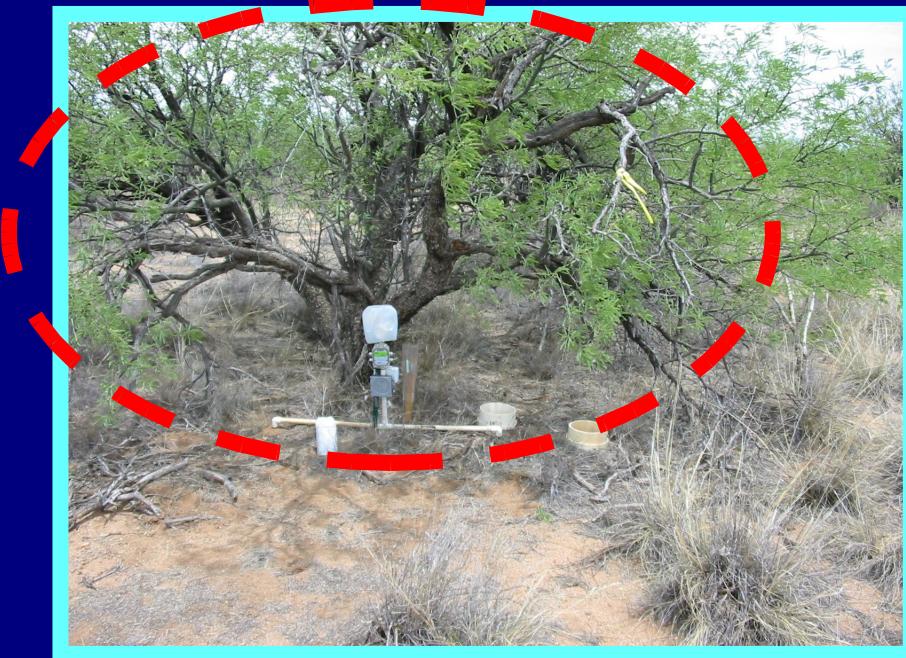


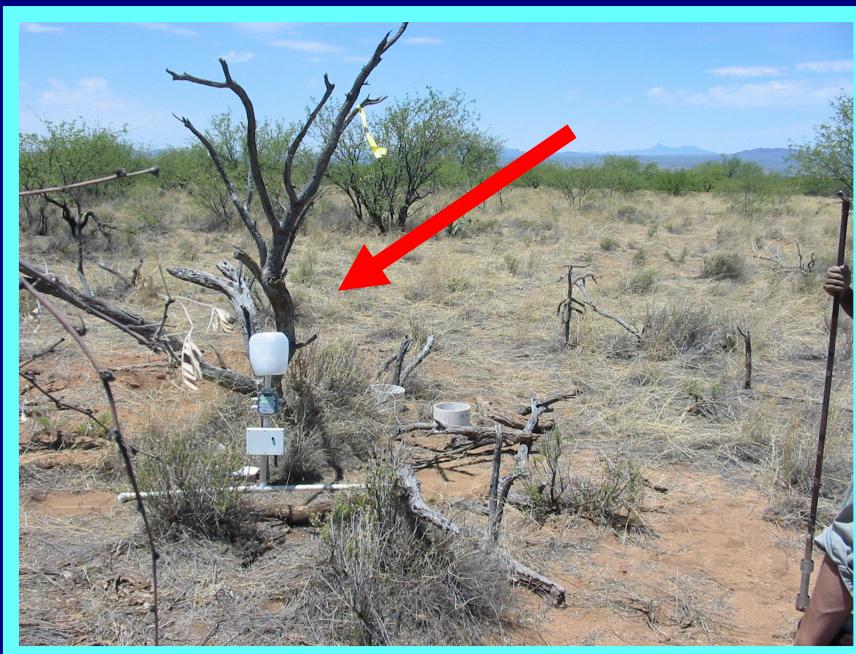
SRER

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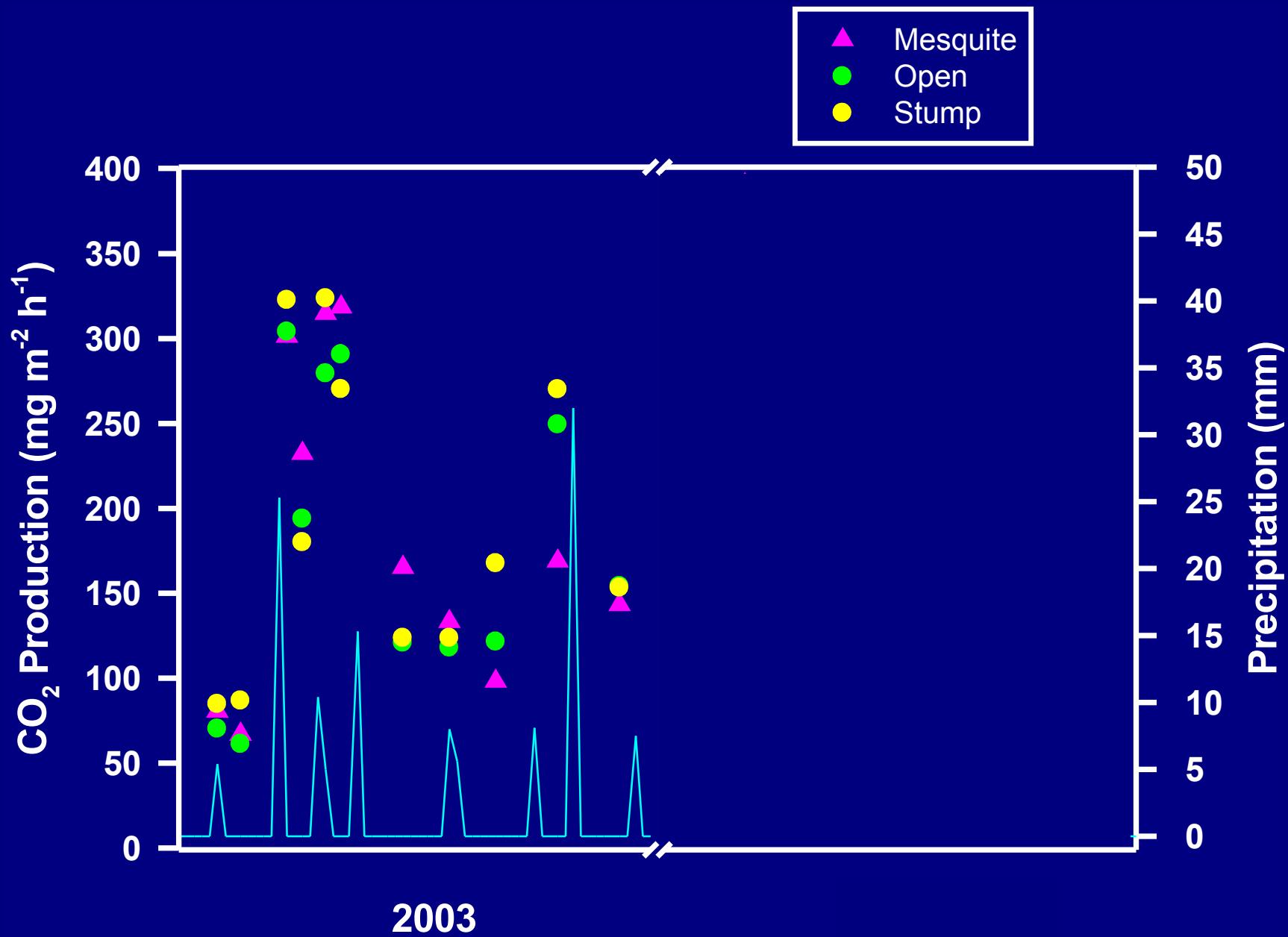
	Monsoon Begins	Monsoon Ends	Total Days	Total Rainfall (mm)
2003	Jul 11	Sep 06	58	170
2004	Jul 09	Aug 16	39	109

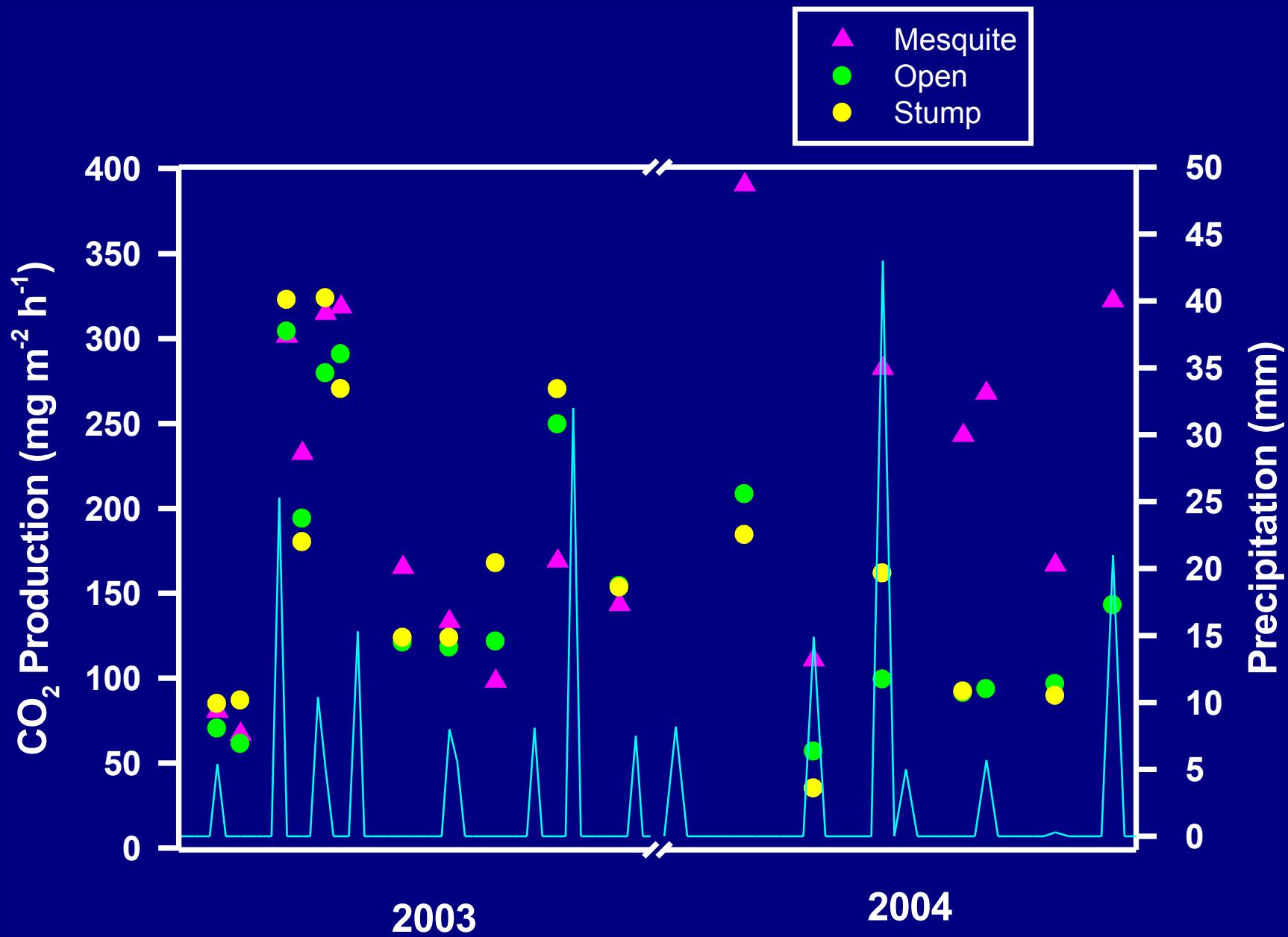
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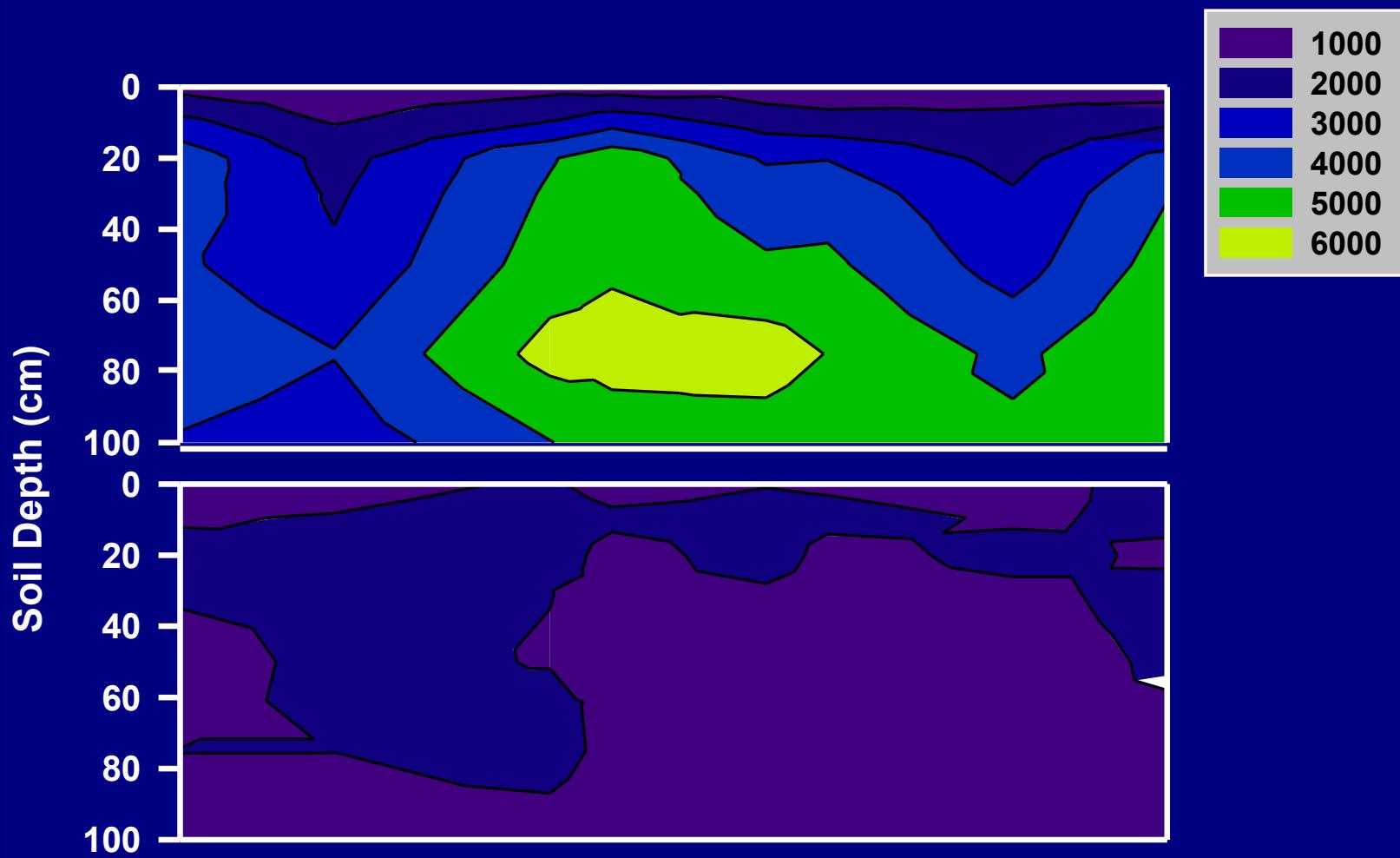
All soils drier in 2004 (potential reduced by 65%)

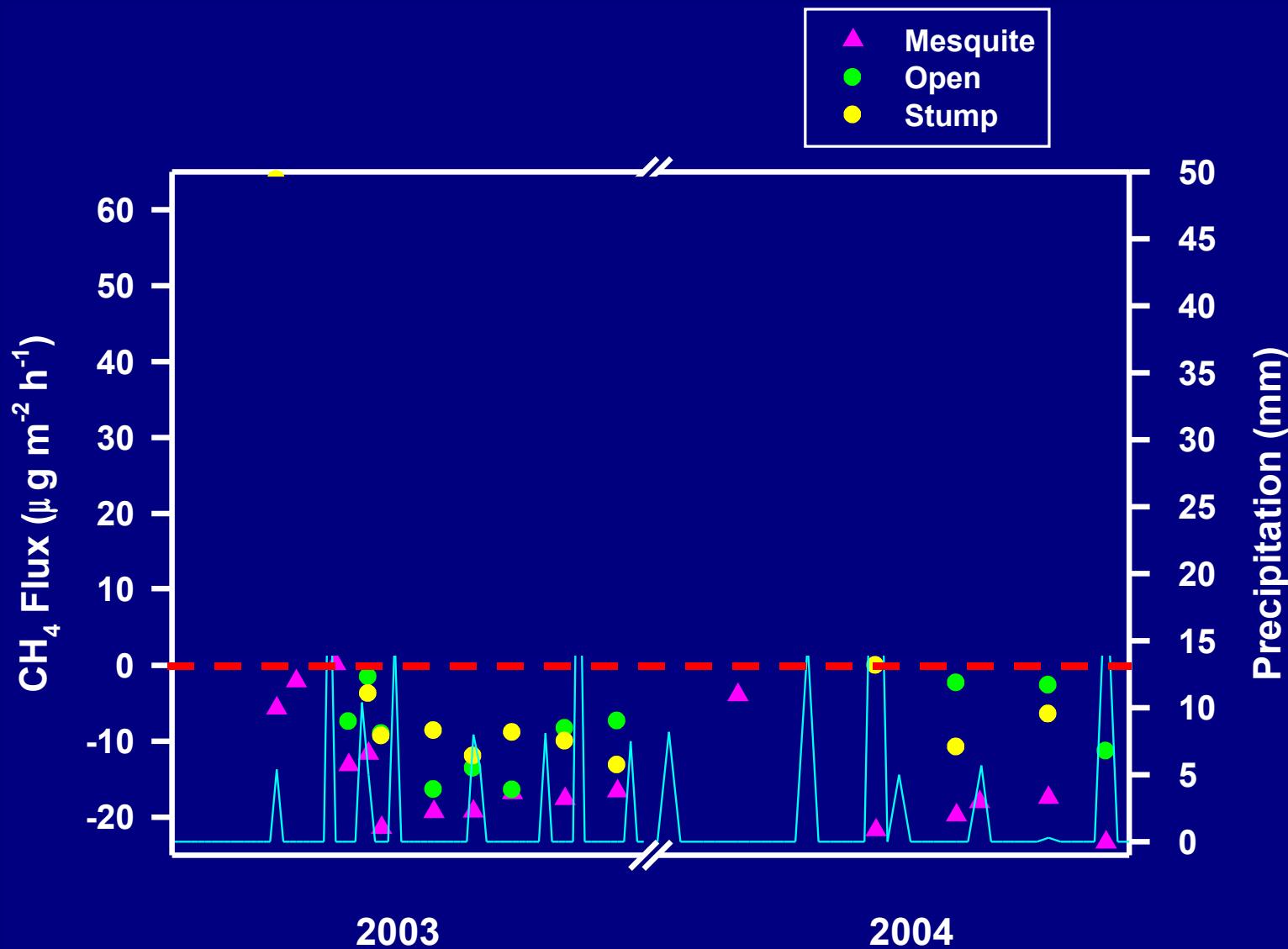
Mesquite soils slowest to moisten, maintained moisture longer (1.5 – 2.0 X organic C, 0-10 cm)

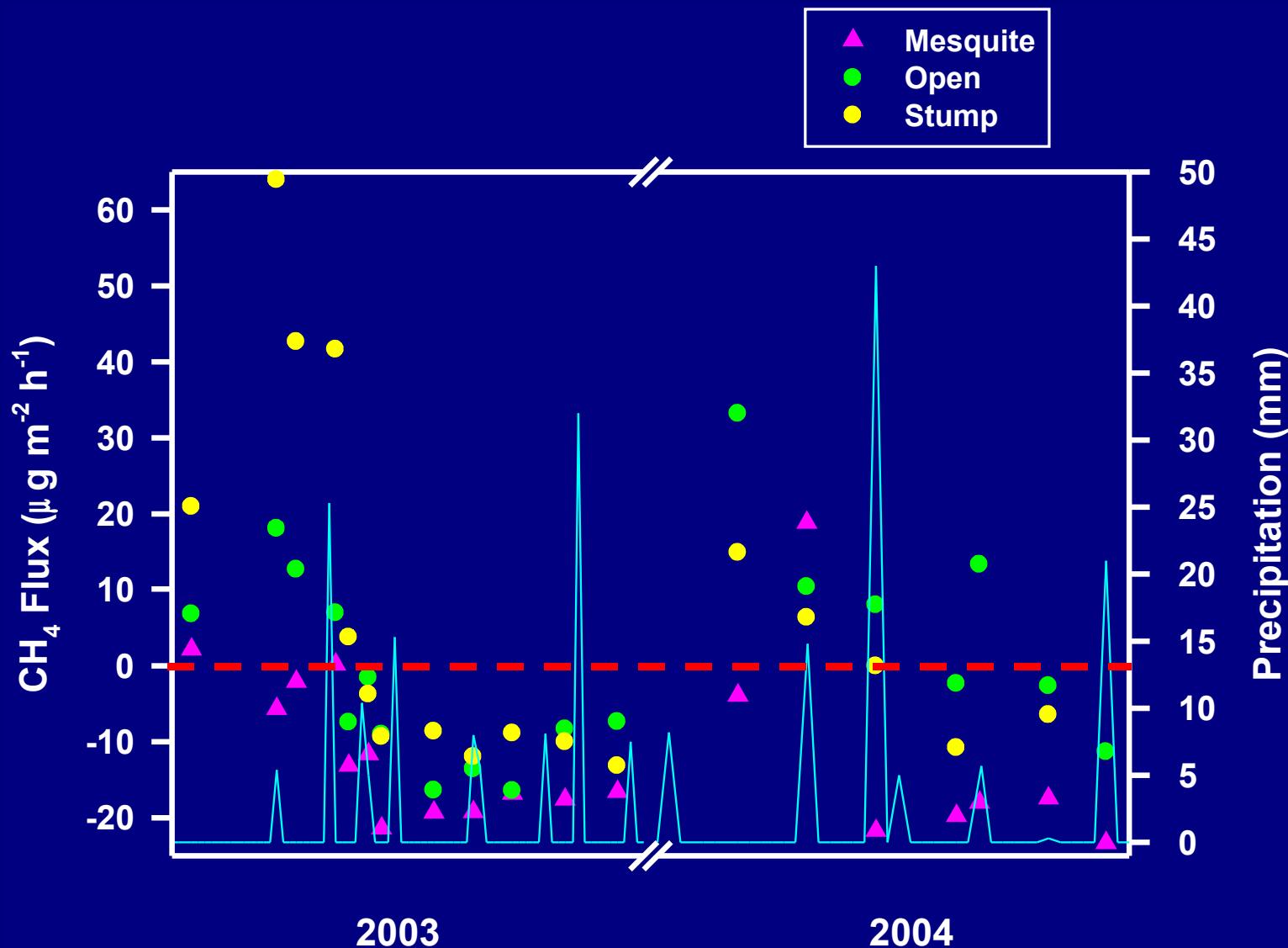
Mesquite soils ~2°C cooler both years

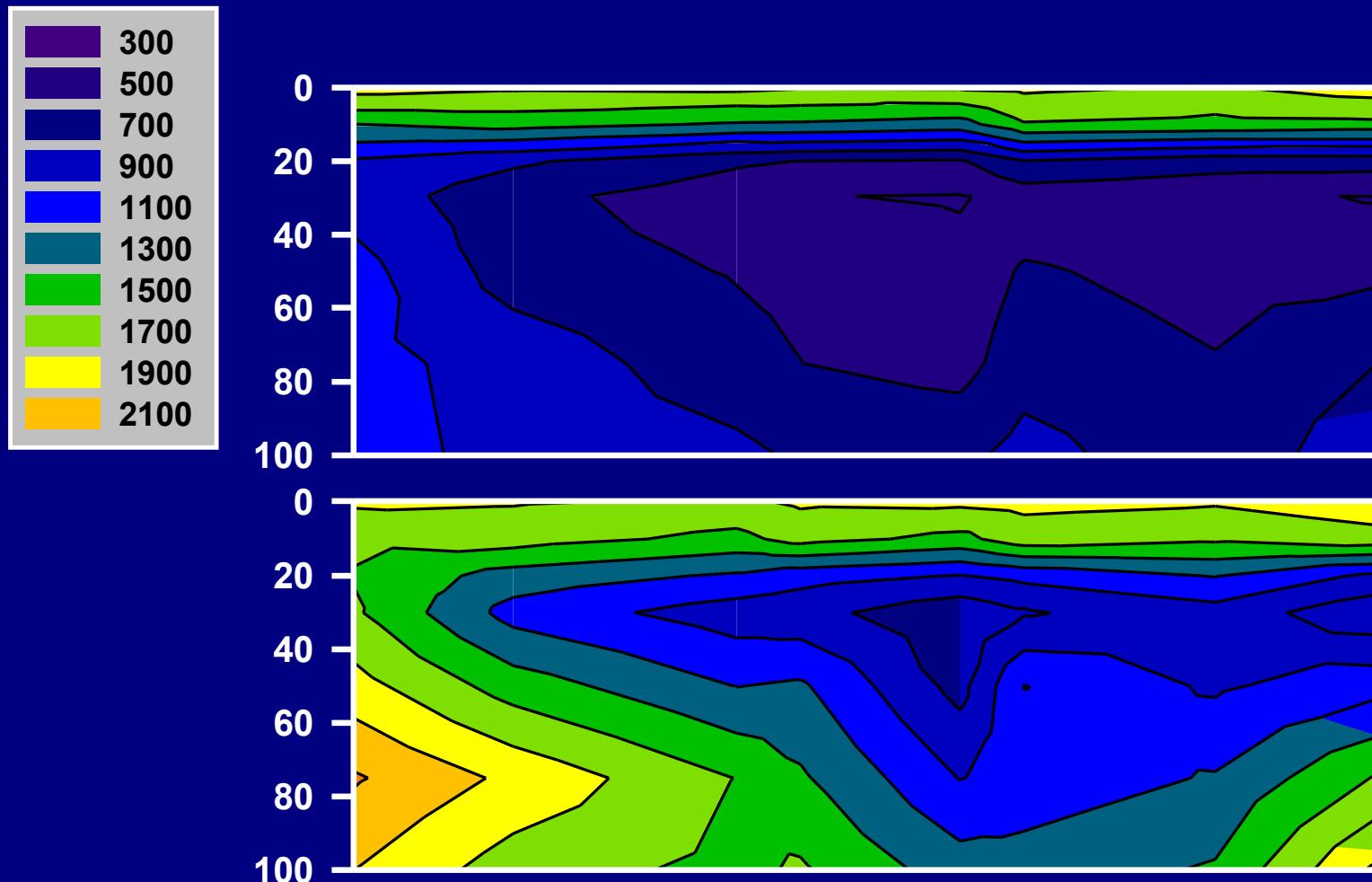












Summary

- Given adequate monsoon precipitation, CO₂ fluxes were equal in all sites
- Reduced precipitation, highest CO₂ production under mesquite (30% increase over 2003)

Summary

- Given adequate monsoon precipitation, CO₂ fluxes were equal in all sites
- Reduced precipitation, highest CO₂ production under mesquite (30% increase over 2003)
- Mesquite soils had steady CH₄ sink with moisture addition
- Stump and open sites: CH₄ source for first ~3 weeks of monsoon

In preparation

**Mesquite control measures and trace gas
(CO₂, N₂O, CH₄) production and
consumption in Southwestern rangelands
over two monsoon seasons**

McLain, Martens, McClaran

Acknowledgements

Dean A. Martens
ASA Meetings, Indianapolis, IN
(November 14)

